



Sonderseminar

Donnerstag, 28. März 2019

12:15 Uhr

WSI, Seminarraum S 101

“Quantum repeater network based on diamond”

Abstract: Quantum repeaters in quantum communication network are required to connect a quantum computer with its users on line. Diamond is a good candidate for the platform of quantum repeaters because of extremely long memory time. The working principle of the repeater is quantum teleportation based on entanglement within and between diamonds. I will summarize our recent activities toward the development of diamond-based quantum repeater devices.

References:

- 1) Phys. Rev. Lett. 114, 053603 (2015) "Entangled absorption of a single photon with a single spin in diamond"
- 2) Nat. Commun. 7, 11668 (2016) "Geometric spin echo under zero field"
- 3) Nat. Photon. 10, 507–511 (2016) "High fidelity transfer and storage of photon states in a single nuclear spin"
- 4) Nat. Photon. 11, 209–214 (2017) "Optical holonomic single quantum gates with a geometric spin under a zero field"
- 5) Opt. Lett. 43, 2380–2383 (2018) "Universal holonomic single quantum gates over a geometric spin with phase-modulated polarized light"
- 6) Nat. Commun. 9, 3227 (2018) "Universal holonomic quantum gates over geometric spin qubits with polarised microwaves"

Prof. Hideo Kosaka
Yokohama National University
Japan